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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/943,778	08/30/2001	Kunal R. Parekh	4475.1US (98-1097.1)	2586

24247 7590 07/29/2002

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EXAMINER

PHAM, HOAI V

ART UNIT PAPER NUMBER

2814

DATE MAILED: 07/29/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/943,778

Applicant(s)

PAREKH ET AL.

Examiner

Hoai V Pham

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 30 April 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-4, 6-9, 10-15, 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prall et al. [U.S. Pat. 6,274,423] in view of Sandhu et al. [U.S. Pat. 6,124,626].

With respect to claims 1-3, 9-12, and 20, Prall et al. (figures 12-20, cols. 1-8) discloses a DRAM comprising:

a substrate (12) having a capacitor structure disposed thereon, the capacitor structure including a storage node (42), a dielectric layer (44) overlying the storage node, and a conductive cell plate (46) overlying the dielectric layer, each of the dielectric layer and the conductive cell plate having an end portion;

a conductive contact (60) extending downward and adjacently beside the capacitor structure, the end portion of the dielectric layer extending closer to the conductive contact than the end portion of the conductive cell plate (see figure 20); and

a BPSG layer (56) disposed over the capacitor structure and encasing the end portions of the dielectric layer and the conductive cell plate, the BPSG layer disposed between the capacitor structure and the conductive contact (see figure 20).

With respect to claims 4 and 15, Prall et al. discloses that the storage node and the conductive cell plate are heavily doped with dopants (see col. 4, lines 30-32 and lines 42-45).

With respect to claims 6, 7, 17 and 18, Prall et al. discloses that the dielectric layer comprises a capacitor cell dielectric (nitride) layer (see col. 4, lines 41-42).

With respect to claims 8 and 19, Prall et al. discloses that the capacitor structure comprises a container-shaped capacitor (see figure 20).

With respect to claim 13 Prall et al. discloses that the conductive contact comprises at least one of metal (see col. 5, lines 65-67).

With respect to claim 14 Prall et al. discloses that the conductive contact comprises a digit line (62) (see figure 20).

Prall et al. fails to show a TEOS layer disposed between the BPSG layer and the capacitor structure. However, Sandhu et al. shows a TEOS layer (57) disposed between the BPSG layer (53) and the capacitor structure (48, 50, 52) to wrap around difficult edges or plates (see figure 2, col. 6, lines 43-60). Therefore, it would have been obvious to the skilled in the art to use the TEOS layer disposed between the BPSG layer and the capacitor structure into the Prall et al. device to wrap around difficult edges, plates and provide dielectric oxygen loss protection.

4. Claims 5 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prall et al. [U.S. Pat. 6,274,423] and Sandhu et al. [U.S. Pat. 6,124,626] as applied to claims 1-4, 6-9, 10-15 and 17-20 above, and further in view of Tsai [U.S. Pat. 5,763,306].

Prall et al. does not explicitly show that the storage node and the conductive cell plate are doped with phosphorous. However, Tsai shows that it is obvious to skilled in the art to dope phosphorous in the polysilicon to increase conductivity (see col. 6, lines 12-22).

### ***Response to Arguments***

5. Applicant's arguments filed 4/30/02 have been fully considered but they are not persuasive.

In response to applicant's argument that "there is not thing in the Prall reference that teaches or suggests forming a TEOS layer over the capacitor structure" and

“Sandhu reference does not teach or suggest forming a TEOS layer over layers, i.e., dielectric material 50, electrode 52, that have been partially etched away”. This argument is not persuasive because Prall (the main reference) shows that the dielectric material 44, electrode 46 have been partially etched away (see fig. 18), while Sandhu et al. shows a TEOS layer (57) disposed between the BPSG layer (53) and the capacitor structure (48, 50, 52) to wrap around difficult edges or plates (see figure 2, col. 6, lines 43-60). Furthermore, Applicant cannot show nonobviousness by attacking the references individually where the rejection is based on a combination of references. In re Young et al., 56 CCPA 757, 403 F.2d 754, 865 OG 320, 159 USPQ 725. Therefore, it would have been obvious to the skilled in the art to use the TEOS layer disposed between the BPSG layer and the capacitor structure as taught by Sandhu into the Prall et al. device to encase the end portion of the dielectric layer and the conductive plate.


### ***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).
7. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoai V Pham whose telephone number is 703-308-6173. The examiner can normally be reached on 6:30A.M. - 6:00P.M..
9. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7724 for After Final communications.
10. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

HP  
Hoai Pham  
July 25, 2002

  
OLIK CHAUDHURI  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800